

The background of the title slide is a composite image. On the left is a close-up of a green leaf. In the center is a landscape with a blue sky, white clouds, and a body of water. On the right is a solid green vertical bar.

# ***Sustainability and the building industry: assessing chemicals of concern***

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**NSF International**  
**October 24, 2013**

# Agenda



- **Overview of NSF**
- **Introduction to Sustainability Assessment Standards for Building Products Industry**
- **Chemicals of Concern in Sustainability Assessments**
- **Building Product Industry Market Drivers**

# NSF International



**NSF International is an independent, not-for-profit, non-governmental public health and safety organization.**

**Our mission and focus has always been protecting and improving human health!**



# NSF Sustainability Standards – Building Products



## Today:

- ANSI/BIFMA e3
- NSF/ANSI140
- NSF/ANSI 332
- NSF/ANSI 336
- NSF/ANSI 342
- NSF/ANSI 347

Furniture

Carpet

Resilient floor coverings

Commercial furnishing fabric

Wallcovering products

Single ply roofing membranes



## In Development:

- ANSI/NSC 373
- NSF/ANSI 375
- NSF/ANSI 416

Dimension Stone

Sustainable Water Contact Products

Sustainable Water Treatment

Chemicals

## Product Category Rules:

Flooring, Seating, Storage, Countertops

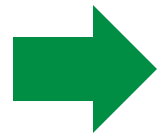


# NSF Sustainability Standards



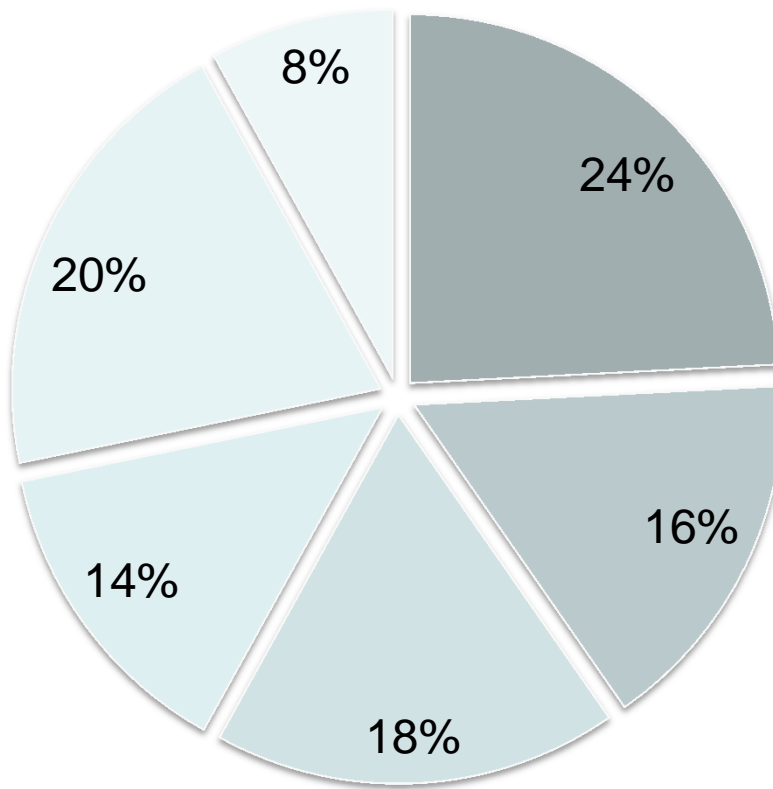
## Typical Criteria for an NSF Sustainability Assessment:

- Product Design
- Product Manufacturing
- Long-Term Value
- Corporate Governance
- End of Life Management
- Innovation



Aggregation of single attribute criteria to assess product on a life cycle basis

# Sustainability Standard Example



- Public Health and Environment (30 Points)
- Energy and Energy Efficiency (20 Points)
- Materials (22 Points)
- Manufacturing (17 Points)
- End of Life (25 Points)
- Innovation (10 Points)

# Tiered Performance

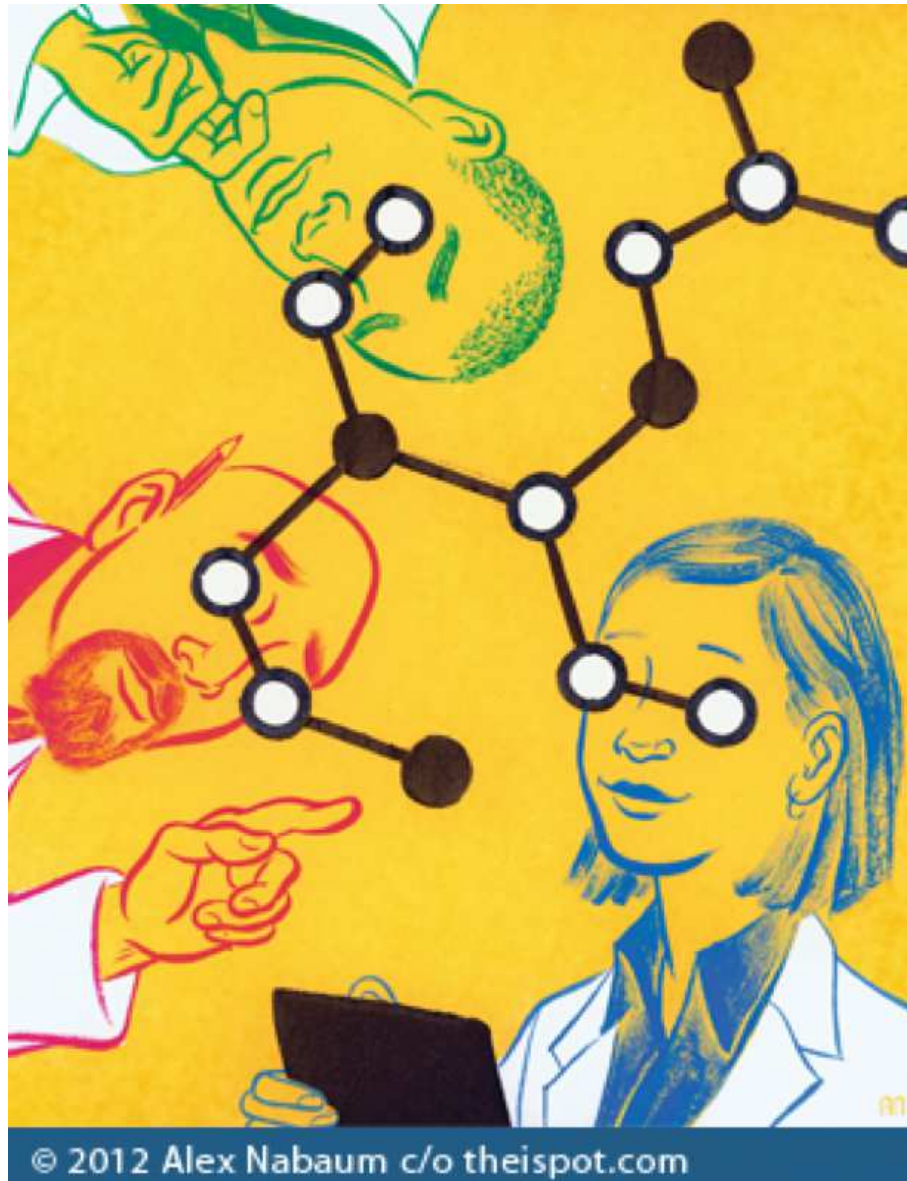


- Common template of “credits” earned toward a minimum threshold of performance.
  - Conformant
  - Silver
  - Gold
  - Platinum





# Chemicals of Concern in the Building Industry



- Sustainability Standards
- GreenScreen™
- Health Product Declarations (HPDs)



# Chemicals of Concern – Certification Standard



## Chemicals of Concern – Sustainability Standards



- ANSI/BIFMA e3 Furniture
- NSF/ANSI140 Carpet
- NSF/ANSI 332 Resilient floor coverings
- NSF/ANSI 336 Commercial furnishing fabric
- NSF/ANSI 342 Wallcovering products
- NSF/ANSI 347 Single ply roofing membranes
- NSF/GCI 355 Greener Chemical Products & Processes

### **In Development**

- NSC/ANSI 373 Dimension Stone
- NSF/ANSI 375 Sustainable Water Contact Products
- NSF/ANSI 416 Sustainable Water Treatment Chemicals

# Chemicals of Concern – NSF Sustainability Standards



## Typical Criteria for an NSF Sustainability Assessment:

- **Product Design**
- **Product Manufacturing**
- Long-Term Value
- Corporate Governance
- End of Life Management
- Innovation

# Chemicals of Concern – NSF Sustainability Standards



Screening level and  
based on authoritative  
lists.



# Chemicals of Concern – NSF Sustainability Standards



## “Living” - list of lists

Pharos Acronym	Concern Flagged on Annex A	Priority or Secondary COC
Prop 65	Known to cause cancer or repro toxicity	Priority
EU SVHC	Carcinogenic Toxic for Reproduction Mutagenic Endocrine activity	Priority
EU SVHC	vPvB	
EU CMR	Carcinogen: Category 1 or 2 or GHS Category 1A or 1B Mutagen: Category 1 or 2 or GHS category 1A or 1B Reproduction: Category 1 or 2 or GHS Category 1A or 1B	
EU ED	Category 1 or 2 endocrine disruptor	
IARC	Group1 or Group 2A	
TRI PBT		
NTP-OHAaT	Clear Evidence of adverse effects-developmental toxicity Clear evidence of adverse effects-reproductive toxicity	
NTP-RoC	Known to be a human carcinogen Reasonably anticipated to be a human carcinogen	
US OSHA Carc	US OSHA carcinogens	Priority
AOEC	Rs Rrs	Secondary
EPA ODS	Class I and ClassII	Secondary



United States Environmental Protection Agency

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Science & Technology

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About EPA

### Toxics Release Inventory (TRI) Program

TRI Home

Learn About TRI

TRI Information for You

TRI Data and Tools

Reporting for Facilities

TRI Chemicals

Laws and Rulemakings

Get Involved in TRI

Site Map

You are here: [EPA Home](#) » [Toxics Release Inventory \(TRI\) Program](#) » [Persistent Bioaccumulative Toxic \(PBT\) Chemicals Covered by the TRI Program](#)

## Persistent Bioaccumulative Toxic (PBT) Chemicals Covered by the TRI Program

There are 16 PBT chemicals and 4 PBT chemical compound categories which are subject to reporting under EPCRA Section 313. This page lists the name, identification number and reporting threshold for each.

### Chemical Categories

Category Name	TRI Category #	Reporting Threshold (in pounds unless noted otherwise)
Dioxin and dioxin-like compounds (manufacturing; and the processing or otherwise use of dioxin and dioxin-like compounds if the dioxin and dioxin-like compounds are not used in the manufacturing or processing of dioxin and dioxin-like compounds)	N150	0.1 grams



# http://pharosproject.net/material/



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the signal news & notes

building product library

chemical and material library

certifications and scoring

## Chemical and Material Library

There are 25867 materials profiled in the Chemical and Material Library

### Reduce your project's environmental and health hazards.

- Search over 20,000 substances screened against over 40 authoritative hazard and warning lists
- View prioritized environmental and health hazards, restrictions, and potential health hazards in the life cycle

### Search Made Simple

- Search chemicals, wood species, and other materials by common name, scientific name, or CAS number
- Autocomplete offers chemical selections as you type

### Chemical and Material Library

Search for a chemical, compound, or biobased material

### Direct Chemical and Compound Hazard Quickscreen

Very High Hazard of...

- PBT** OSPAR - Priority PBTs & EDs & equivalent concern; PBT - Chemicals
- DEVELOPMENTAL** US NIH NTP CERHR - Repro & Developmental Monographs: 29 toxicant effects in humans or laboratory animals (and 2 others)
- REPRODUCTIVE** US NIH NTP CERHR - Repro & Developmental Monographs: 4 toxicant effects in humans or laboratory animals (and 4 others)
- RESTRICTED LIST** US EPA PPT - Chemical Action Plans: Listed Chemical of Concern

High Hazard of...

- CANCER** CAL EPA - Prop 65: Cancer (and 4 others)

Medium Hazard of...

- EUROPEAN** European Commission - Endocrine Disruptors Screening (and 3 others)

### Identify Direct Hazards

- Chemicals, polymers, and other substances are screened against 29 hazard lists
- Wood species are screened against 5 endangered species lists
- All substances are also screened against 9 restricted substance lists
- Health Hazards prioritization is informed by the GreenScreen for Safer Chemicals

### Discover Life Cycle Chemical Concerns

- Pharos researches the manufacturing chemistry for substances in Pharos listed products, and these

### Lifecycle Hazard Quickscreen

Research Status: Preliminary literature review drafted  
The Pharos team has undertaken a preliminary literature review of some of the products and identified the following chemicals. This list of chemicals is not intended to represent the production or life cycle of this substance.

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30-day free trial

"Pharos team -- As usual you are right on top of the emerging details that help us all better understand the nuances of these complex issues."

Rick Schwolsky, Editor in Chief,  
EcoHome

ility<sup>SM</sup>  
red



# Chemicals of Concern – NSF Sustainability Standards



## “Static” – Annex B

CASRN	Chemical Name	Endocrine Disruptor	PBT	Carcinogen	Reproductive Toxicant	Rating
100-00-5	1-Chloro-4-nitrobenzene	NO	NO	YES	NO	CARC
100-25-4	p-Dinitrobenzene	NO	NO	NO	YES	REPRO
10026-24-1	Cobalt sulfate heptahydrate	NO	NO	YES	NO	CARC
10034-93-2	Hydrazine sulfate	NO	NO	YES	NO	CARC
100-40-3	4-Vinylcyclohexene	NO	NO	YES	NO	CARC
100-41-4	Ethylbenzene	NO	NO	YES	NO	CARC
100-42-5	Styrene	YES	NO	YES	NO	ED CARC
100-44-7	Benzyl chloride	NO	NO	YES	NO	CARC
10108-64-2	Cadmium chloride	NO	NO	NO	YES	REPRO

# Chemicals of Concern – GreenScreen



**CAS# 111-11-111**



**High concern BM=1**



**CAS# 222-22-222**



**Lower concern BM=3**

# Chemicals of Concern – GreenScreen



- **Full GreenScreen**
  - Detailed hazard assessment includes list of lists screening as well as full assessment of all available data in the scientific literature.
- **GreenScreen list translator**
  - Screening level. Living list of lists.

<http://www.cleanproduction.org/Greenscreen.php>

# Chemicals of Concern – Full GreenScreen

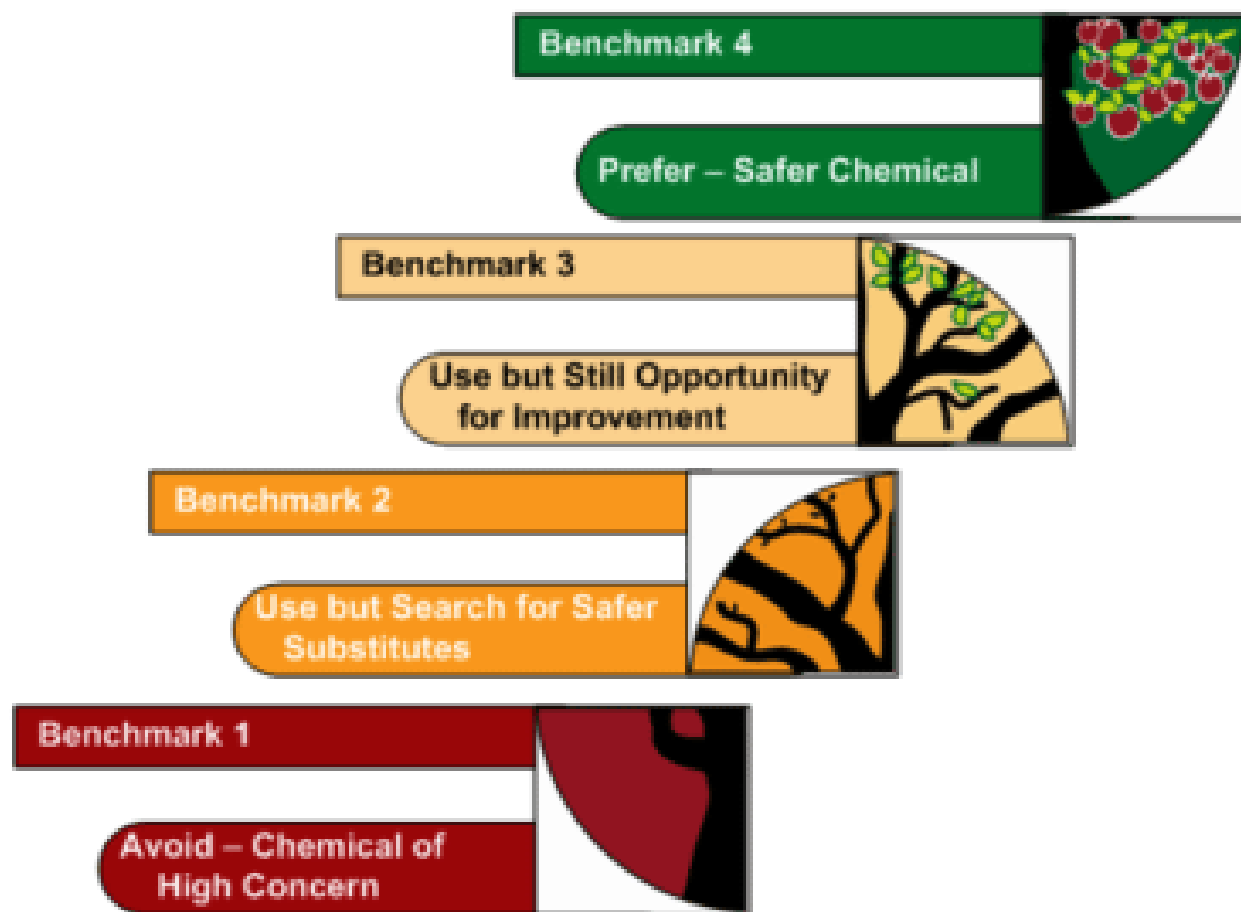


## GreenScreen Hazard Ratings

Group 1 Human					Group II and II* Human									Ecotox	Fate		Physical	
Carcinogenicity	Mutagenicity	Reproductive toxicity	Developmental toxicity	Endocrine activity	Acute toxicity	Systemic toxicity		Neurotoxicity	Skin sensitization*	Respiratory sensitization*	Skin irritation	Eye irritation	Acute aquatic toxicity	Chronic aquatic toxicity	Persistence	Bioaccumulation	Reactivity	Flammability
L	L	L	M	M	L	S	R	S	R	L	L	L	H	H	VL	L	M	L



# Chemicals of Concern – Full GreenScreen



## Chemicals of Concern – GreenScreen List Translator



- The List Translator is a method to identify likely Benchmark 1 chemicals by analysis of the specified lists only.
- Specified lists are available on the CPA website.
- Three possible scores:
  - **LT-1** = expected Benchmark 1
  - **LT-P1** = possible Benchmark 1
  - **LT-U** = undetermined based on the specified lists



# Chemicals of Concern – Health Product Declarations (HPD)

A screenshot of the HPD 1.0 form. It includes sections for Product Information, Materials, and Chemicals. The form is partially filled out with text and checkboxes.Another screenshot of the HPD 1.0 form, showing different sections than the previous one, including a table for chemical declarations.

[http://www.hpdcollaborative.org/standard-documents/hpdstandard\\_v1\\_0\\_121215.pdf](http://www.hpdcollaborative.org/standard-documents/hpdstandard_v1_0_121215.pdf)

# Chemicals of Concern – Health Product Declarations



**A standardized reporting format – NOT a rating system.**

Short Agency & List Title	Agency/ List	Hazard Type	Hazard Warning
AOEC - Asthmagens	AOEC	Respiratory	Asthmagen (AG) - generally accepted
	AOEC	Respiratory	Asthmagen (ARr) - irritant-induced
	AOEC	Respiratory	Asthmagen (ARrs) - sensitizer-induced & irritant-induced
	AOEC	Respiratory	Asthmagen (ARs) - sensitizer-induced
Environment Canada - Domestic Substances List	DSL	PBT	Persistent, Bioaccumulative and inherently Toxic (PBiT) to aquatic organisms
	DSL	PBT	Persistent, Bioaccumulative and inherently Toxic (PBiT) to



# Chemicals of Concern – Health Product Declarations



Ingredient name		CAS#	% Weight	GS	RC	Nano	Role
Bisphenol A diglycidyl ether		293733-21-8	35-42.6%	P1	No	No	Resin
Cancer	MAK: Carcinogen Group 3A- Evidence of carcinogenic effects but not sufficient to establish MAD/BAT value						
Endocrine	EU ED: Category 2 – In vitro evidence of biological activity related to endocrine disruption.						
Skin or eye	EU R-Phrase: R36: Irritating to skin (also in EU H-Statements)						
Multiple	EPA Action: EPA Chemical of Concern – Action Plan Published.						
Notes							

# Chemicals of Concern – Health Product Declarations



## CERTIFICATIONS AND COMPLIANCE

**Certifying Party = Self declaration:** Manufacturer's self-declaration; **Independent lab:** Manufacturer's self-declaration using results from an independent lab and declaration of conformance. **Second Party:** Verification by trade association or other interested party; **Third Party:** Verification by independent certifier (ideal).

**Applicable facilities** = Manufacturing sites to which testing applies.

Type	Standard or Certification			Certifier or Laboratory
	Certifying Party	Issue Date	Expiry Date	Certificate URL
	Applicable Facilities			Certification & Compliance Notes
VOC Emissions (interior products only)				
VOC Content (wet applied only)				
Recycled Content				

# Key Markets and Drivers





# Key Markets and Drivers for Sustainability Assessments



- **USGBC LEED**
  - Driving product assessments; EPDs, LCA's, Green chemistry
  - Pilot Credit 80: ANSI/BIFMA e3
- **General Services Administration (GSA)**
  - Executive Order 13514
- **EPA**
  - Guidelines for selecting product certification providers and standards
- **States**
  - Driving for consumer product material safety
- **Supplier Sustainability Scorecards**
  - Kaiser Permanente, P&G, Johnson Controls, Walmart
- **Others: NGO's, GRI, CDP, FTC, Retailers**



# Chemicals of Concern – LEEDv4



## MR Credit: Building Products Disclosure and Optimization – Material Ingredients

- **Option 1. Material Ingredient Reporting (1 point)**
  - Inventory all ingredients publically.
  - Proprietary ingredients must specify GreenScreen benchmark, as defined in GreenScreen v1.2.
  - Full disclosure HPD is acceptable for this credit.
- **Option 2: Material Ingredient Optimization (1 point)**
  - *GreenScreen v1.2 Benchmark.* Products that have fully inventoried chemical ingredients to 100 ppm that have no Benchmark 1 hazards:
    - If any ingredients are assessed with the GreenScreen List Translator, value these products at 100% of cost.
    - If all ingredients are have undergone a full GreenScreen Assessment, value these products at 150% of cost.

# NSF/ANSI 140 Market Adoptions



- NSF 140 Gold Certification is required by 13 States
- GSA Schedule 72
- Colleges & Universities
- Potential LEED Credits



# ANSI/BIFMA e3 Market Adoptions



- LEED Pilot Credit 80
- Air Force
- EPA
- Homeland Security
- Navy
- States: Florida & Georgia
- Canada



# Questions?



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